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| Name: | Date: |
| Course/Subject: Keystone Algebra II | Team: Math Department |
| Topic: I Operations with Complex Numbers | School District: Blue Mountain |

Key Learning: Complex numbers can be combined or broken apart and analyzed using various properties and rules.

Unit Essential Question: What are the various operations applied to complex numbers?

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| Concept: Introduction of imaginary number system. | Concept: Introduction of complex number system. | Concept: Simplifying square roots involving imaginary numbers. |
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| Lesson Essential Questions:   * What is an imaginary number? * How does the imaginary number system compare to the real number system? (ET) | Lesson Essential Questions:   * What does the complex number system include? * What is the usefulness of the complex number system? (ET) | Lesson Essential Questions:   * How do we use imaginary numbers to simplify square roots of negative numbers? * Why is it necessary to simplify the square root of a negative number? (ET) |
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| Vocabulary:   * square roots * imaginary number | Vocabulary:   * complex number system * real numbers * rational numbers * irrational numbers | Vocabulary:   * prime * composite |
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| Additional Information/Resources: We will use the graphing calculator to use the operations on complex numbers. | | |

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| Concept: Simplify and evaluate powers of ***i***. | Concept: Operations on complex numbers. | Concept: Problem solving with complex numbers. | Concept: | Concept: |
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| Lesson Essential Questions:   * How does an exponent affect imaginary numbers? * What patterns are noticed with the power of *i*? (ET) | Lesson Essential Questions:   * How are complex numbers simplified using operations? * Explain why the product of two complex conjugates is a real number. (ET) | Lesson Essential Questions:   * How are complex numbers used to solve problems? * Describe a career that would encompass the use of the complex number system. (ET) | Lesson Essential Questions: | Lesson Essential Questions: |
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| Vocabulary:   * exponent | Vocabulary:   * sum of complex numbers * product of complex numbers * conjugate | Vocabulary: | Vocabulary: | Vocabulary: |